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## REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

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09/831279

International Application No. PCT/FI 99 / 0 0 9 3 4

09 NOV 1999 (09.11.99)  
International Filing Date

The Finnish Patent Office  
PCT International Application  
Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference  
(if desired) (12 characters maximum) 8L09PC

**Box No. I TITLE OF INVENTION**  
SPACE STRUCTURE AND A METHOD FOR  
THE COLD SEASON

PRESENTING THEREIN ESPECIALLY

**Box No. II APPLICANT**

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

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Finland

This person is also inventor.

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Facsimile No.

Teleprinter No.

State (that is, country) of nationality:  
FI

State (that is, country) of residence:  
FI

This person is applicant  all designated  all designated States except  the United States of America only  the States indicated in the Supplemental Box for the purposes of:

**Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)**

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

applicant only

applicant and inventor

inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant  all designated  all designated States except  the United States of America only  the States indicated in the Supplemental Box for the purposes of:

Further applicants and/or (further) inventors are indicated on a continuation sheet.

**Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE**

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

agent

common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

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Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

## Box No.V DESIGNATION STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

## Regional Patent

AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT

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OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroun, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line) .....

National Patent (if other kind of protection or treatment desired, specify on dotted line):

<input checked="" type="checkbox"/> AE United Arab Emirates .....	<input checked="" type="checkbox"/> LR Liberia .....
<input checked="" type="checkbox"/> AL Albania .....	<input checked="" type="checkbox"/> LS Lesotho .....
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<input checked="" type="checkbox"/> AT Austria and utility model .....	<input checked="" type="checkbox"/> LU Luxembourg .....
<input checked="" type="checkbox"/> AU Australia .....	<input checked="" type="checkbox"/> LV Latvia .....
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<input checked="" type="checkbox"/> KG Kyrgyzstan .....	<input checked="" type="checkbox"/> YU Yugoslavia .....
<input checked="" type="checkbox"/> KP Democratic People's Republic of Korea .....	<input checked="" type="checkbox"/> ZA South Africa .....
<input checked="" type="checkbox"/> KR Republic of Korea .....	<input checked="" type="checkbox"/> ZW Zimbabwe .....
<input checked="" type="checkbox"/> KZ Kazakhstan .....	Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet:
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	<input checked="" type="checkbox"/> MA Morocco .....

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

## Box No. VI PRIORITY CLAIM

 Further priority claims are indicated in the Supplemental Box.

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application:*	international application: regional Office
item (1) (09.11.98) 9 November 1998	982430	Finland		
item (2)				
item (3)				

The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s): 982430

\* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

## Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA)  
(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA / SE

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year) Number Country (or regional Office)

## Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following number of sheets:

request : 3  
description (excluding sequence listing part) : 8  
claims : 3  
abstract : 1  
drawings : 2  
sequence listing part of description : \_\_\_\_\_

Total number of sheets : 17

This international application is accompanied by the item(s) marked below:

1.  fee calculation sheet
2.  separate signed power of attorney
3.  copy of general power of attorney; reference number, if any:
4.  statement explaining lack of signature
5.  priority document(s) identified in Box No. VI as item(s):
6.  translation of international application into (language):
7.  separate indications concerning deposited microorganism or other biological material
8.  nucleotide and/or amino acid sequence listing in computer readable form
9.  other (specify):

Figure of the drawings which should accompany the abstract:

fig. 1

Language of filing of the international application: Finnish

## Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

BORENİUS &amp; CO OY AB



Silvio Hjelt  
Patent Agent

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1. Date of actual receipt of the purported international application:

09 NOV 1999

( 09 -11- 1999 )

2. Drawings:

 received: not received:

3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:

4. Date of timely receipt of the required corrections under PCT Article 11(2):

5. International Searching Authority (if two or more are competent): ISA / SE

6.  Transmittal of search copy delayed until search fee is paid.

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Date of receipt of the record copy by the International Bureau:

08 DECEMBER 1999

( 08.12.99 )

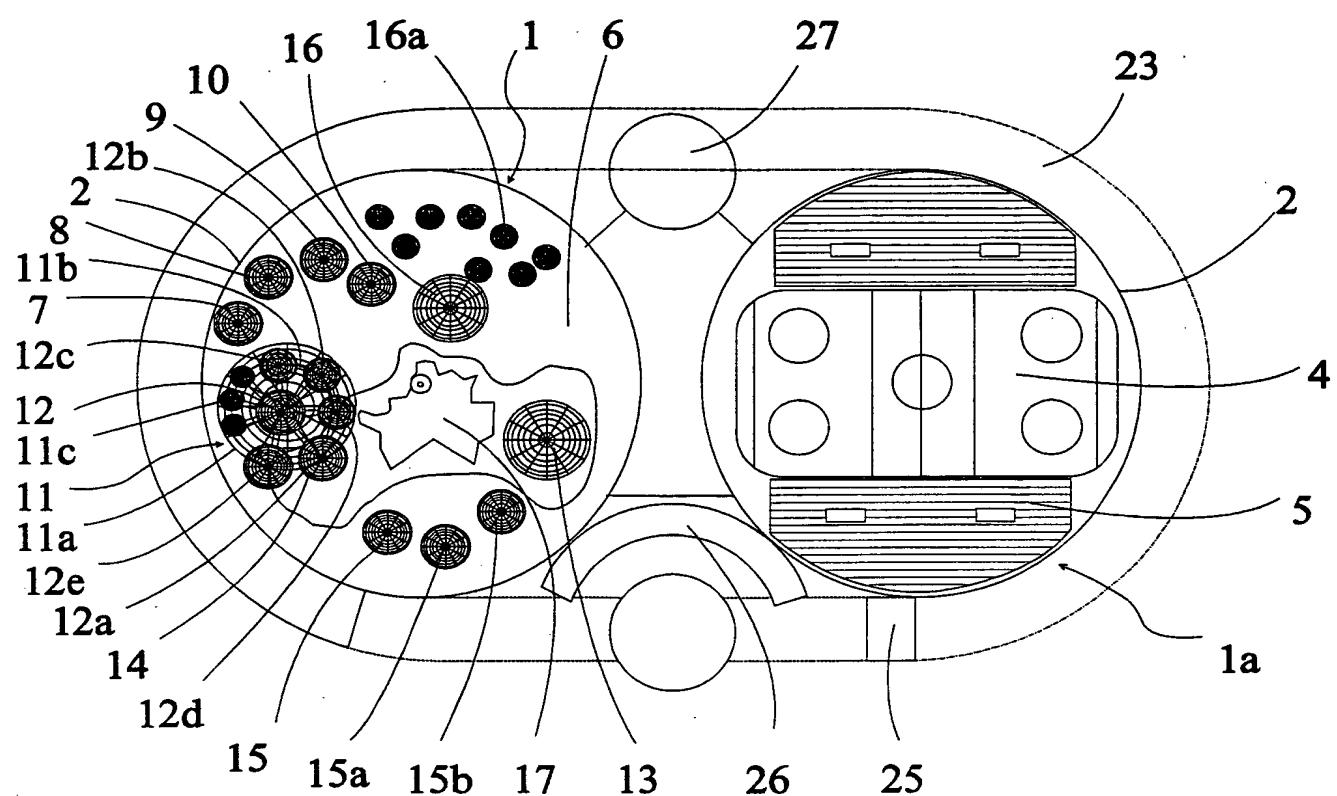


FIG 1

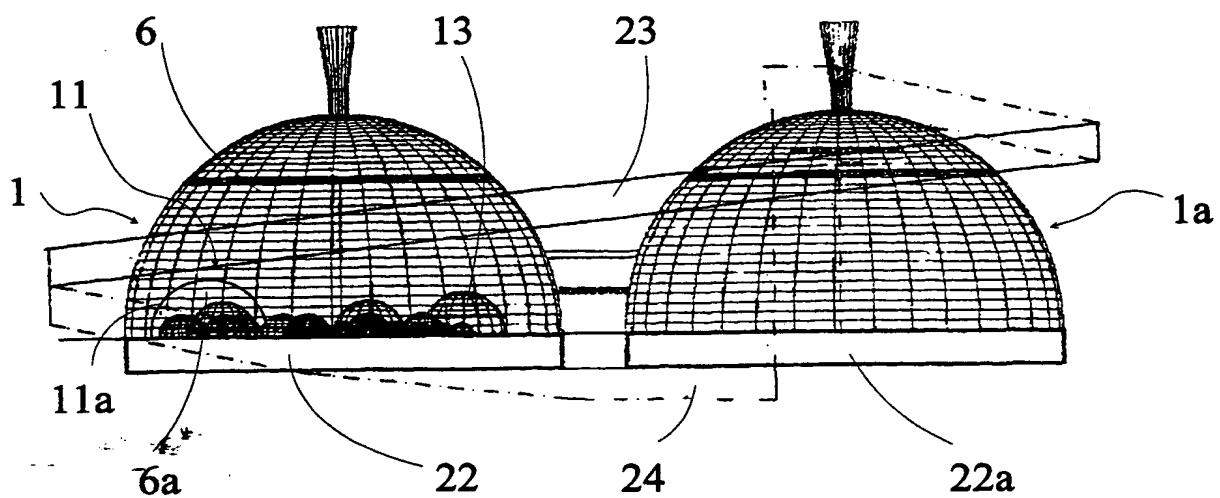
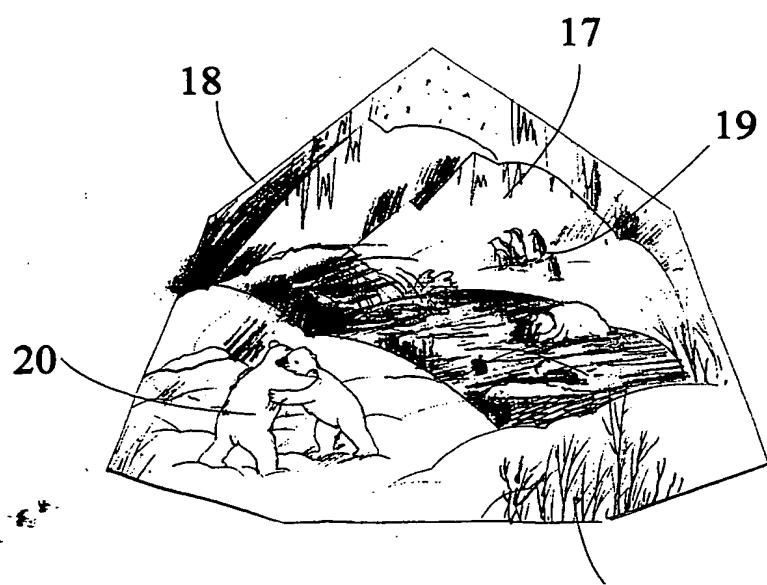
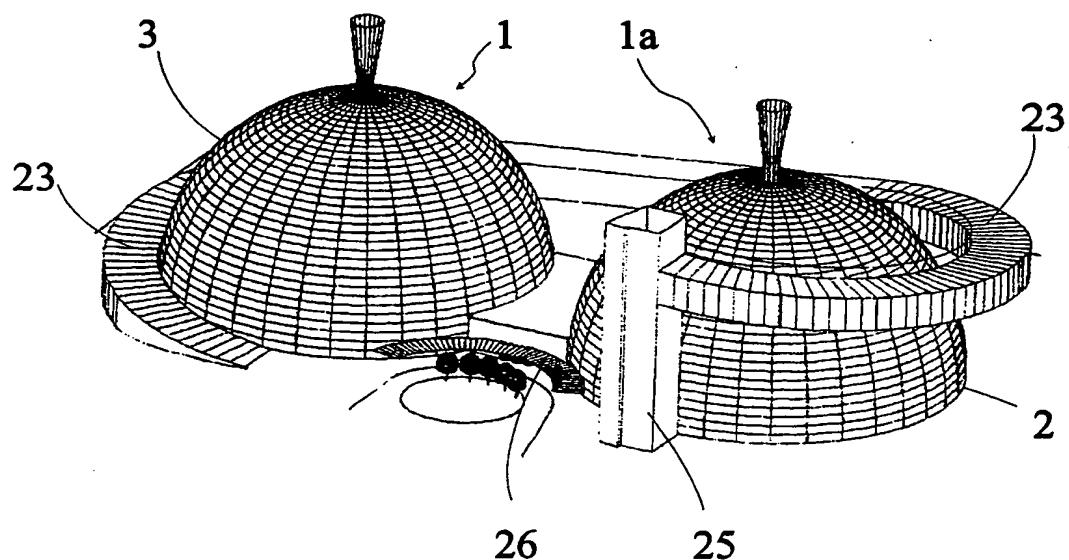


FIG 2



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Tilarakennelma sekä menetelmä etenkin kylmän vuodenajan esittämiseksi siinä

Keksinnön kohteena on etenkin vapaa-ajan viettoa varten sovittettu tilarakennelma, jossa on yhden tai useamman ulkoilmasta erotetun sisätilan määrittävä seinämä- ja vastaavasti kattorakenteet. Keksinnön kohteena on edelleen menetelmä eri ilmastojen mukaisten ja etenkin talvisten toimintojen esittämiseksi ja/tai toteuttamiseksi olennaisesti suljettujen rakenteiden määrittämässä ulkoilmasta erotetuissa tiloissa.

Ennestään tunnetaan kasvihuoneita ja senkaltaisia ulkoilmasta eristettyjä tiloja, missä lämpötilaminimien leikkauksien ja etenkin keinotekoisesti aikaansaadun nostetun lämpötilan puitteissa pystytään viljelemään sellaisiakin kasveja, jotka kyseissäillä leveysasteilla eivät tulisi ulkoilman lämpötilavaihteluiden takia itsenäisesti toimeen. Näiden kasvihuoneiden tarkoituksena on yleensä kasvien tai kasviosien tuottaminen tavalla tai toisella syötäväksi tai aistittaviksi, tai tietyissä tapauksissa tukemaan tieteellistä toimintaa. Edelleen tunnetaan eläintarhoja, missä eri yleensä valituille eläinlajeille on järjestetty sellaiset suojet, joissa eläimet ainakin tietynä ja etenkin kylmänä vuodenäkana saavat suojaaa ulkoilmalta.

Tunnetaan myös osittain jäähdytettyä tiloja kuten luistelua varten tarkoitettuja keinojäääratoja, missä voidaan harjoittaa tiettyjä talviurheilulajeja ulkoilman lämpötilasta riippumatta. Samankaltaista tarkoitusta varten on kehitetty keinolumella varustettuja olennaisesti vaakasuuntaisia hiihtolatuja. Edelleen tunnetaan syväjäähdytettyjä tiloja, joita käytetään etenkin elintarvikkeiden säilytykseen niin alhaisessa lämpötilassa, että luontainen biologinen hajoaminen hidastuu tai on kokonaan estetty.

Urheilulaitoksien yhteydessä on aikaisemmin ehdotettu keino-jaäratojen yhdistämistä lämmittettyjen mahdollisesti katettujen talvijalkapallokenttien yhteyteen, jolloin jäähdytyslaitoksen tuottamaa hukkalämpöä käytettäisiin hyväksi jalkapallokentän nurmikon lämmitykseen maanalaisen lämmitysjärjestelmän puitteissa.

Edellä mainitut lämpötilaltaan säädetyt tilajärjestelyt on kukaan erikseen tarkoitettu jonkin varsin suppean toiminnon harjoittamista varten. Näin ollen on toistaiseksi puuttunut kokonaisvaltainen eri vuodenaikojen mukaisiin luontaisiin toimintoihin perustuva tilajärjestely, jossa maapallon ja erityisesti sen pohjoisten alueiden eri vuodenajat ovat haluttua leveysasteella ja haluttuna ajankohtana esittävissä mahdollisimman luonnonmukaisessa ympäristössä.

Kyseisen puutteen korjaamiseksi tämä keksintö esittää ratkaisun siten kuin oheisissa patenttivaatimuksissa on esitetty. Näin ollen keksinnön mukainen tilarakennelma tunnetaan siitä, että olennaisesti yhtenäiseen sisätilaan tai siihen välittömästi liittyen on sovitettu useampi sellainen ainakin osittain suljettu erillistila, jonka ilmasto on erikseen säädettävissä toisistaan poikkeavien olosuhteiden mukaisesti. Keksinnön mukainen menetelmä tunnetaan taas siitä, että sopivasti yhteen sisätilaan muodostettujen tai siihen välittömästi liittyvien erillisiin olennaisesti suljettujen erillistilojen lämpötila säädetään erikseen vastaamaan asianomaista ilmastoaa, etenkin vuodenaikaa siten, että kulloistakin ilmaston tilaa vastaavat toiminnot saatetaan toteutumaan kulloisenkin ilmaston keskilämpötilan omaavassa tilassa.

Seuraavassa, esitetään keksintö esimerkinomaisesti oheisiin kaavamaisiin piirustuksiin viitaten, missä:

Kuvio 1 esittää pohjakuvan keksinnön erään suoritusmuodon mukaisesta ratkaisusta,

Kuvio 2 leikkauskuvana esittää kuvion 1 mukaista suoritusmuotoa sivusta katsottuna,

Kuvio 3 perspektiivikuvana esittää kuvion 1 mukaista suoritusmuotoa, ja

Kuvio 4 esittää erään erillistilan mahdollista yksityiskohtaa.

Kuvion 1 mukaisessa suoritusmuodossa on kaksi arkkitehtoonista syistä ympyrämäiseksi muodostettua, yleistä sisätilaa rajoittavaa rakennelmaa 1, 1a, joihin kuuluu sopivasti lämpöeristetty tai muulla tavoin ulkoilman lämpötilavaikutusta ainakin jonkin verran tasaava seinämä-/kattorakenne 2, 3, joka esitetyssä suoritusmuodossa on toteutettu kahtena pääkupolina, kuten etenkin kuvista 3 ilmenee. Tämä ulkorakenne 2, 3 voi tietenkin olla toteutettu myös muun muotoisena, esimerkiksi pyramidina, tavanomaisena suuntaissärmiönä tai mielivaltaisen monimuotoisena. Edullisesti kupoli- tai vastaava rakenne on muodostettu auringonvaloa jonkin verran läpäisevästä lasista tai senkaltaisesta materiaalista siten, että ulkoilman valo ja/tai pimeys on hyödynnettäväissä sisätilassakin.

Esitetyssä suoritusmuodossa pääkupolirakenne 1a vastaa toteutukseltaan yleisesti sinänsä tunnettua jää- tai vastaavaa urheilu- tai senkaltaista toimintaa varten sovitettua hallia, eli siinä on keskeinen, sopivasti jäähdytetty kenttä 4, esimerkiksi sinänsä tunnettu keinojääräta, johon liittyy sinänsä tunnettu katsomorakenne 5. Tätä tilaa voidaan käyttää esimerkiksi urheilutapahtumia, konsertteja, tanssiesityksiä, näytöksiä tai senkaltaisia tapahtumia varten. Tässä kupolirakenteessa vallitsee olennaisesti lämpimät ilmasto-olosuhteet, mutta rakenne liittyy loogisesti ja toiminnallisesti keksinnöön varsinaisen perusajatuksen mukaiseen toiseen pääkupoliin 1, jossa yleinen ilmasto sinänsä saattaa olla huomattavastikin kylmempä.

Keksinnön mukaisesti pääkupolin 1 määrittämään sisätilaan 6 on sijoitettu useita erillistiloja 7...10, 12...14 tai erillistilaryhmiä 11, 15, 16. Kunkin tällaisen erillistilan lämpötila on keksinnön mukaisesti sopivasti erikseen säädetävissä halutun toiminnon mukaisesti.

Lämpötilansäättöä varten on edullisesti kuhunkin pääkupoliin 1, 1a liittyvään, sopivasti sen alla olevaan huoltotilaan 22, 22a järjestetty yksi tai edullisesti useampi lämpöpumppuperiaatteella tai vastaavalla tavalla toimiva sinänsä tunnettu koneisto (ei esitetty kuvioissa), jo(i)lla muita kylmempia tiloja jäähdytetään. Kylmien tilojen jäähdyytyksessä syntyvää ylijäämälämpöä käytetään edullisesti muita tiloja lämpimämpien tilojen 5, 9 lämmitykseen. Lisäksi mainittuun huoltotilaan on myös edullisesti sovitettu arktiseen maisemaan sopivaa jäätaidetta varten sovitettu koneisto sekä muut laitoksen toimintaa varten tarpeelliset koneet ja laitteet. Edelleen huoltotiloihin on sopivasti järjestetty tilat, välineet ja laitteet esim. lumiveistoksi ja senkaltaisten tuottamiseksi ja huoltamiseksi.

Pääkupolien 1, 1a väliin on kuvattussa suoritusmuodossa järjestetty esim. vastaanotto-, lipunmyynti- 26 ja eräitä ravintolatiloja 27, jotka näin ollen palvelevat molempia pääkupoleja. Samaten lämpötilansäätkoneistot edullisesti palvelevat molempia tiloja joko sellaisenaan tai erillisten lämmönsiirtoyksiköiden välityksellä. Molempia pääkupoleja kiertää kuvattussa suoritusmuodossa vielä hiihto-/laskettelu- ja/tai kelkkailurinne 23 keinolumineen, joka sekä edullisesti muodostetaan mainittujen koneistojen avulla. Rinne 23 kiertää kupolirakenteita 1, 1a edullisesti siten, että se päättyy huoltotilojen 22 tason alla olevaan tasoon 24, josta hissi 25 nostaa käyttäjät takaisin ylös rinteen 23 huipulle. Kupolien 1, 1a korkeuden ollessa, esim. n. 40 metriä ja läpimitan vastaavasti n. 70 metriä saavutetaan tällä tavalla rinne 23, jonka pituus on n. 500 metriä. Tässä mittakaavassa toteutettuna kupoliin 1a sovitussa katsomossa on tilaa 2000...5000 henkilölle.

Sopivasti kylmään pääkupoliin 1 on keksinnön mukaisesti sovitettu erillistiloja tai erillistilarylhytiä, joiden lämpötilat tilakohtaisesti säädetään sopivalla sinänsä tunnetulla jäähdystyks- ja/tai lämmityslaitteistolla. Näin ollen pääkupoliin 1 sovitettu "neljän vuodenajan puisto" muodostaa keksinnön erään tyypillisimman tilakokonaisuuden. Kyseinen puisto muodostuu sopivasti neljästä erillisestä, ainakin osittain läpinäkyväällä seinällä toteutuneesta tilasta, missä tila 7 saattaa esittää tyypillistä pohjoismaista tai arktista talvimaisemaa, johon siis on järjestetty talviset olosuhteet ja vastaava lämpötila. Etenkin talviolosuhteiden aikaansaamiseksi tilaan on edullisesti sovitettu saman keksijän US-patentista 5,407,392 tunnettu talvimaisemajärjestely, jossa jäähdystylitteiston ja vesihöyrysystön avulla toteutetaan talviolosuhteita kuvaavia jäämuotoumia, jotka saattavat olla joko erikseen toteutettuja taiteellisia luomuksia tai esim. luonnonmukaisia huurtuneita puita ja rakennelmia. Tilassa saattaa lisäksi olla luonnolliset talven kestävät kasvit ja eläimet ja/tai niiden jäljitelmiä. Kunkin tilan yhteyteen järjestetään edullisesti tilan kuvaaman vuodenajan mukaiset ääni- ja valoefektit, kuten talvella tuulen suhina ja eläimien ulvontaa, metsän huminaa, edullisesti valokaapelijärjestelyllä muodostettavaa kaamosvalaistusta ja revontulivaikutusta jne.

Talvimaisemaa seuraava tila 8 vastaavasti edullisesti vastaa pohjoismaista kevättä. Siinäkin on edullisesti samat lämmönsäätö- ja muut laitteistot, joilla tilassa vallitsevia olosuhteita mukautetaan halutun vuodenajan mukaan. Vastaavalla tavalla tila 9 saattaa käsittää kesää ja tila 10 syksyä kuuvat maisemat ja olosuhteet. Mainituista tiloista saattaa esimerkiksi kesää kuvaava tila 9 käytännössä olla toteutettuna sellaisella lämpötilalla, että siinä itse asiassa esitetäänkin trooppista kesää aitoine trooppisine kasvineen ja eläimineen. Toisaalta on kaikkien tilojen 7...10 olennaisesti samankaltaisista laitteistojen ja käytettyjen luonnollisten kasvien ja mahdollisesti eläimien sopivalla valinnalla sellainenkin järjestely toteutettavissa, että olosuhteet mainituissa tiloissa

7...10 itse asiassa jatkuvasti muuttuvat luonnollista vuoden-aikakiertoa vastaanalla tai esimerkiksi sitä nopeammalla ryt-millä, jolloin pohjoisiin olosuhteisiin tottuneet kasvit viih-tyvät samalla tavalla kuin luonnossa. Näissäkin tilossa toteu-tetaan edullisesti vuodenaikaan sopivat ääni- ja valoefektit kuten lintujen laulu, auringonvalon suotautuminen sademetsän lehvistön läpi jne.

Edellä kuvattu vuodenaikoja kuvaava puutarhajärjestely on toteutettavissa joko yhden tai useamman läpinäkyvän seinämän käsittävillä erillisrakennelmilla, ja/tai erityisen edullisesti siten, että niihin johtaa ympäristötilasta ja/tai vierei-estä erillistilasta ovi niin, että tilaan voidaan astua sisään, jolloin niissä sopivasti kuljetaan tilasta toiseen. Keksinnön joidenkin edullisten suoritusmuotojen mukaisesti yleisjärjestelyyn saattaa mainittujen vuodenaikapuistojen lisäksi tai tilalle liittyä muitakin tilaratkaisuja joko erikseen tai toteutettuna yhden pääkupolin 1 puitteissa. Näin ollen rakennelmaan liittyy edullisesti esim. arktinen sauna-kokonaisuus 11, joka sopivasti käsittää erillisten päätilaan 6 järjestettyjen kupolien tai vastaavien alle järjestetyt kylpy-tilat lämpimine ja kylmine altaineen esim. alla tarkemmin esitetyllä tavalla. Kylmä allas 14 saattaa tällöin käsittää kylmäkoneiston muodostaman jääpeitteen, jossa on avanto avanto-uintia varten. Sama allas 14 voi myös palvella talvikalastus-järjestelyä siten, että altaassa on esim. pilkillä jääpeitteen alta kalastettavia kaloja joko erikseen sinne tuotuina tai siellä kasvatettuina.

Erityisen edullisesti saunakokonaisuus 11 käsittää yhteisen, useita pienempiä erillistiloja 12, 12a, 12b, 12c, 12e kattavan erillistilan 11a, joka sopivasti asettuu päätilaan 6 puittei-siin ja joka sinänsä ympäröi mainitut eri toimintoja varten sovitetut erillistilat 12, 12a, 12b, jne. Näin on käytännössä muodostettu useita sisäkkäisiä rakennekerroksia käsittävä kokonaisuus, jossa kulloinkin kahden rakennekerroksen 1-11a, 11a-12 jne. välinen tila 6, 6a on erikseen ilmastoitavissa tässä hakemukseissa esitettyjen periaatteiden mukaisesti.

Vastaavasti on kunkin sisimmän erillistilan 12, 12a, 12b jne. ilmasto halutulla tavalla muunneltavissa vierekkäisistä tiloista tai ympäröivästä tilasta poikkeavalla tavalla. Näin ollen kuviossa 1 esitetty saunaosastokokonaisuus 11 käsittää sopivasti yhteen välikupoliin 11a sovitettu edullisesti keskeinen löylytila 12, jonka ympärille on sijoitettu edellä aikaisemmin mainitun, erillistilaan 12a järjestetyn jääkylmän altaan 14a lisäksi esim. toiseen erillistilaan 12b sovitettu lämmin allas.

Kyseisen erillistilan 12b ilmasto voi edelleen olla kokonaisuudessaan tai erillisiltä, joissakin tapauksissa erikseen jäähdytetyiltä rakenteiltaan niin kylmä, että lämpimästä altaasta höyrystyvä vesi huurtuu tilan 12b rakenteisiin ja muodostaa kauniin luonnonmukaisen koristuksen. Näiden kylmien erillistilojen 12a, 12b lisäksi tilaan 11a voi olla esimerkiksi lapsia varten sovitettu kokonaan lämmin tila 12c lämpine altaineen, jossa tilassa voi olla huurteisten rakenteiden ja kasvuston jäljitelmat ja/tai lämpimään tilaan sovitut kasvit ja muut koristeet. Saunatilaan 12 voi edelleen liittyä erillinen lumikylpytila 12d, jossa on keinotekoisesti muodostettua lunta saunomisen yhteydessä tapahtuvaa kieriskelyä varten.

Mainitut edullisesti välitilaan 11a sovitetut erillistilat 12, 12a, 12b, 12c ja 12d on edullisesti keskenään yhdistetty sopivasti läpinäkyvillä käytävillä 11b. Samalla tavalla on järjestetty yhteys edullisesti välitilan 11a kehän tuntumaan järjestettyihin pukeutumistiloihin 11c sekä esimerkiksi jääbaaria käsittävään erillistilaan 12e, joka myös voi olla sovitettuna kuvion esittämällä tavalla osittain välitilaa 11a rajoittavan seinämä-/kattorakenteen ulkopuolelle.

Edelleen kokonaisjärjestely saattaa käsittää arktisen eläintarhän 13, aikaisemmin mainitun arktisen kalastus- ja sukellusaltaan 14 sekä sopivasti muita erillistiloja talviseen maisemaan sovitettavissa olevia ajanviete-, harrastus- tai urheilu-

toimintoja varten. Vastaavalla tavalla on yhteiseen pääkupolin 1 muodostamaan yhteistilaan 6 sovitettavissa esim. yhtä tai sopivasti useampaa eri uskontokuntaa varten sovitettut lumikirkot 15, 15a, 15b häitää tai senkaltaisia tapahtumia varten. Edelleen tilaan on edullisesti muodostettu lumihotelli iglootyyppisine majoitustiloineen 16, 16a, 16b, joiden yhteyteen edullisesti on järjestetty tilakohtaiset pesu- yms. tilat. Nämä tilat ovat edullisesti käytettävissä myös rakennelmassa vierailivien henkilöiden asianmukaista, eri tilojen olosuhteita vastaavaa pukeutumista varten.

Yleisesti arktisia olosuhteita kuvaavan sisätilan 6 keskelle on esitetyssä suoritusmuodossa vielä järjestetty keinotekoinen jäävuori 17 joko erilliseen suljettuun tilaansa tai avoimesti suoraan sisätilaan 6. Kuvio 4 esittää tässä suhteessa jäävuori-maisemaa, joka keksinnön erään suoritusmuodon mukaisesti on läpinäkyvin seinin 18 rajattu omaan erillistilaansa, jolloin siinä voi olla esim. arktiseen maailmaan kuuluvia eläimiä joko elävinä 19 tai jäljitelminä 20 sekä sopivasti a.o. maiseman liittyvää kasvustoa 21. Jos jäävuori 17 on sovitettu suoraan yleiseen sisätilaan 6, on se taas käytettävissä esim. kiipeilyä varten. Kiipeilyn aiheuttama jäävuoren 17 kuluminen on nimittäin erityisen helposti paikattavissa käytettävissä olevan jäähdytyskapasiteetin avulla.

Edellä on esimerkinomaisesti esitetty keksinnön joitakin suoritusmuotoja ja niiden mukaisesti toteutettavissa olevia järjestelyitä. Alan asiantuntijalle on tietenkin selvää, että keksintö on toteutettavissa myös muilla tavoilla oheisten patenttivaatimusten puitteissa.

**Patenttivaatimukset**

1. Etenkin vapaa-ajan viettoa varten sovitettu tilarakennelma (1, 1a), jossa on yhden tai useamman ulkoilmasta erotetun sisätilan (6) määrittävä seinämä- ja vastaavasti kattorakenteet (2, 3), tunnettu siitä, että olennaiseksi yhtenäiseen sisätilaan (6) tai siihen välittömästi liittyen on sovitettu useampi sellainen ainakin osittain suljettu erillistila (7...16b, 23), jonka ilmasto on erikseen säädettävissä toisistaan poikkeavien olosuhteiden mukaisesti.
2. Patenttivaatimuksen 1 mukainen rakennelma, tunnettu siitä, että mainittuihin ainakin osittain suljettuihin erillisiin tiloihin (7...16b, 23) on sovitettu kulloinkin eri toimintoryhmiin ja sopivasti erillistilan (7...16b, 23) erityisen ilmastolämpötilan mukaisesti toisiinsa liittyviä toimintoja, edullisesti siten, että ne ovat läpinäkyvän seinämän (18) läpi ainakin osittain nähtävissä myös erillistilan (7...16b, 23) ulkopuolelta.
3. Patenttivaatimuksen 1 tai 2 mukainen rakennelma, tunnettu siitä, että ainakin yhden erillistilan (7) lämpötila vastaa Pohjolan tai arktisten alueiden talvilämpötilaa.
4. Jonkin patenttivaatimuksen 1...3 mukainen rakennelma, tunnettu siitä, että eri tilojen lämpötilasäätöä varten on sovitettu yksi tai useampi useammalle osittain suljetulle erillistilalle (7...16b, 23) tai vastaavalle rakennelmaan liittyvälle tilalle yhteen jäähdytys- ja tai lämmityslaitteisto, edullisesti siten, että arktisia ja tai talvisia toimintoja varten sovitettu tilan (7, 11...16, 23) jäähdytyksessä syntyvä ylijäämälämpö on johdettavissa trooppisia ja tai kesäisiä toimintoja varten sovitettu erillistilan (5, 9) lämmitykseen. -

5. Jonkin patenttivaatimuksen 1...4 mukainen rakennelma, tunnettu siitä, että yhtenäiseen sisätilaan (6) liittyen on sen ulkopuolelle järjestetty erillistointoa varten sovitettu erillistila (23), joka sisälämpötilaltaan loogisesti liittyy johonkin yhtenäisessä sisätilassa (6) järjestettyyn erillistilaan (7, 12...16).

6. Jonkin patenttivaatimuksen 1...5 mukainen rakennelma, tunnettu siitä, että mainittuihin ainakin osittain suljettuihin erillistiloihin (7...16b, 23) on sijoitettu luonnonmukaisia ja/tai keinotekoisia kasveja (21) ja/tai eläimiä (19, 20) ja/tai taide- tai senkaltaisen elämyksen aikaansaavia rakennelmia.

7. Jonkin patenttivaatimuksen 1...6 mukainen rakennelma, tunnettu siitä, että sisätilaan (6) on järjestetty ainakin talvea (7) ja kesää (9), sopivasti lisäksi kevättä (8) ja syksyä (10) kuvaavat erillistilat, edullisesti siten, että mainittujen tilojen lämpötilat on sovitettu keskenään vaihtuvan luonnollisen luonnon vuodenaikeityksen tai siitä halutulla tavalla poikkeavan rytmin mukaisesti.

8. Jonkin edellisen patenttivaatimuksen 1...7 mukainen rakennelma, tunnettu siitä, että ainakin yksi erillistila (12) käsittää avantouintia ja/tai talvista pilkkikalastusta tai senkaltaista toimintoa varten sovitettun jääpeitteellä varustetun vesialueen (14), johon sopivasti on sijoitettu kaloja tai senkaltaisia vesieläimiä.

9. Menetelmä eri ilmastotilojen ja etenkin kylmän vuodenajan mukaisten toimintojen esittämiseksi, tunnettu siitä, että lämpötila toiminnallisesti toisiinsa liittyvissä erillisissä olenpäisesti suljetuissa erillistiloissa (7...16b, 23) säädetään erikseen vastaamaan asianomaista ilmastoaa siten, että kulloistakin ilmaston tilaa vastaavat toiminnot saatetaan toteutumaan sopivasti kulloisenkin ilmaston keskilämpötilan

omaavassa tilassa.

10. Patenttivaatimuksen 9 mukainen menetelmä, tunnettu siitä, että kylmemmän erillistilan (7, 11...16, 23) jäähdytykssä syntyvää ylijäämälämpöä käytetään lämpimämmän erillistilan (5, 9) lämmitykseen.

11. Patenttivaatimuksen 9 tai 10 mukainen menetelmä, tunnettu siitä, että eri erillistilojen (7...10) lämpötilat saatetaan vuorotellen keskenään vaihtumaan luonnollisen vuoden-aikarytmityksen kuvaamiseksi ja/tai jäljentämiseksi.

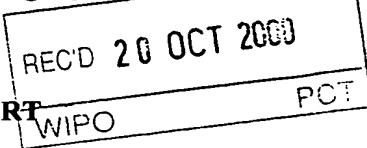
12. Vettä käsittävä allasrakennelma, tunnettu siitä, että allas (14) on sijoitettu olennaisesti suljettuun tilaan (12) siten, että siihen on yhden tai useamman jäähdytyskoneiston avulla muodostettavissa keinotekoinen jääpeite, jossa on tai johon on tehtävissä avannot talviuintia ja/tai -kalastusta varten.

**(57) Tiivistelmä**

Keksinnön kohteena on etenkin vapaa-ajan viettoa varten sovitettu tilarakennelma (1, 1a), jossa on ulkoilmasta erotetun sisätilan (6) määrittäväät rakenteet (2, 3). Sisätilaan (6) on sovitettu useampi sellainen ainakin osittain suljettu erillistila (7...16b, 23), jonka ilmasto on erikseen säädettävissä toisistaan poikkeavien olosuhteiden mukaisesti.

Keksinnön kohteena on myös menetelmä eri ilmastotilojen ja etenkin kylmän vuodenajan mukaisten toimintojen esittämiseksi, missä lämpötila toiminnallisesti toisiinsa liittyvissä erillisissä olennaisesti suljetuissa erillistiloissa (7...16b, 23) säädetään erikseen vastaamaan asianomaista ilmastoa.

Fig 1



(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 8L09PC	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FI99/00934	International filing date (day/month/year) 09.11.1999	Priority date (day/month/year) 09.11.1998
International Patent Classification (IPC) or national classification and IPC7 E04H 3/10		
Applicant LAIJOKI-PUSKA, Ritva		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of \_\_\_\_\_ sheets.

3. This report contains indications relating to the following items:

- I  Basis of the report
- II  Priority
- III  Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV  Lack of unity of invention
- V  Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI  Certain documents cited
- VII  Certain defects in the international application
- VIII  Certain observations on the international application

Date of submission of the demand 08.06.2000	Date of completion of this report 09.10.2000
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer Åke Olofsson / MRO Telephone No. 08-782 25 00

**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

International application No.

PCT/FI99/00934

**I. Basis of the report**

1. This report has been drawn on the basis of (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

the international application as originally filed.

the description, pages \_\_\_\_\_, as originally filed,  
pages \_\_\_\_\_, filed with the demand,  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

the claims, Nos. \_\_\_\_\_, as originally filed,  
Nos. \_\_\_\_\_, as amended under Article 19,  
Nos. \_\_\_\_\_, filed with the demand,  
Nos. \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
Nos. \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

the drawings, sheets/fig \_\_\_\_\_, as originally filed,  
sheets/fig \_\_\_\_\_, filed with the demand  
sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

2. The amendments have resulted in the cancellation of:

the description, pages \_\_\_\_\_

the claims, Nos. \_\_\_\_\_

the drawings, sheets/fig \_\_\_\_\_

3.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the supplemental Box (Rule 70.2(c)).

4. Additional observations, if necessary:

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FI99/00934

**V. Resoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

## 1. Statement

Novelty (N)	Claims	1-12	YES
	Claims		NO
Inventive step (IS)	Claims	1-12	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims		NO

## 2. Citations and explanations

The present invention relates to a spatial structure arranged especially for spending of leisure. The structure comprising structures defining an interior space separated from the ambient open-air. Several of least partially closed separate space are arranged in said interior space wherein the climate in each separate space can be separately regulated in accordance with mutually differing conditions. The invention also relates to a method for presenting different climate conditions and especially activities related to the cool season in which the temperature in functionally inter connected essentially closed separate spaces are separately regulated to correspond to the appropriate climate.

None of the documents cited in the International Search Report, or any combination of them, can be considered to anticipate the invention as defined in claims 1-12. The cited documents describe only the general state of the art, which is not considered to be particular relevance for the invention.

Therefore, the claims are considered to meet the criteria of novelty, inventive step and industrial applicability.

## PATENT COOPERATION TREATY

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NOTIFICATION OF ELECTION  
(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

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in its capacity as elected Office

Date of mailing (day/month/year) 18 July 2000 (18.07.00)	Assistant Commissioner for Patents United States Patent and Trademark Office Box PCT Washington, D.C.20231 ETATS-UNIS D'AMERIQUE
International application No. PCT/FI99/00934	Applicant's or agent's file reference 8L09PC
International filing date (day/month/year) 09 November 1999 (09.11.99)	Priority date (day/month/year) 09 November 1998 (09.11.98)
Applicant LAJOKI-PUSKA, Ritva	

1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:

08 June 2000 (08.06.00)

in a notice effecting later election filed with the International Bureau on:

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2. The election  was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

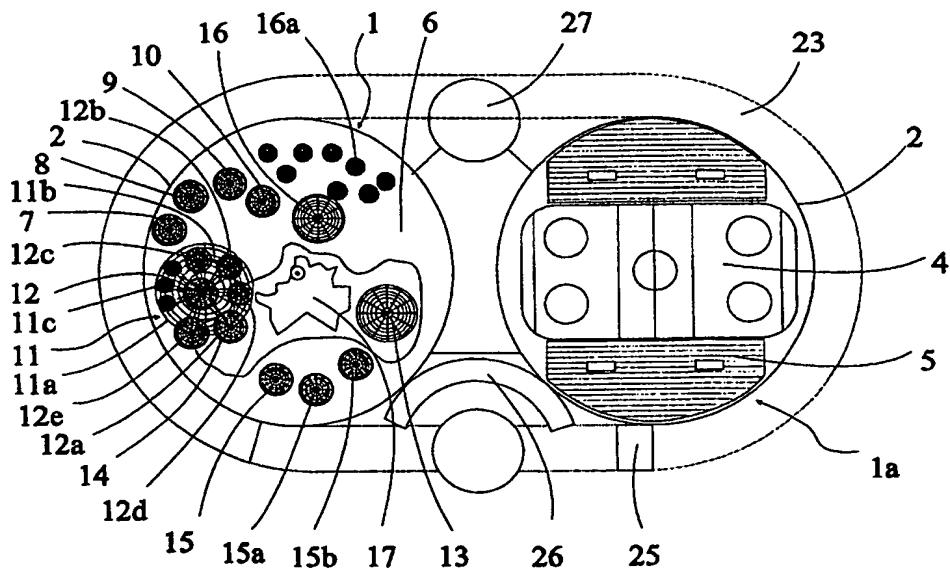
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	Authorized officer  Nestor Santesso  Telephone No.: (41-22) 338.83.38
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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>7</sup> :  E04H 3/10		A1	(11) International Publication Number: <b>WO 00/28174</b>  (43) International Publication Date: 18 May 2000 (18.05.00)
(21) International Application Number: PCT/FI99/00934  (22) International Filing Date: 9 November 1999 (09.11.99)			(81) Designated States: AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), DM, EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
(30) Priority Data: 982430 9 November 1998 (09.11.98) FI			
(71)(72) Applicant and Inventor: LAIJOKI-PUSKA, Ritva [FI/FI]; Visamäki 5 E 37, FIN-02130 Espoo (FI).			
(74) Agent: BORENIUS & CO OY AB; Kansakoulukuja 3, FIN-00100 Helsinki (FI).			
			Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. In English translation (filed in Finnish).</i>

(54) Title: SPACE STRUCTURE AND A METHOD FOR PRESENTING THEREIN ESPECIALLY THE COLD SEASON



## (57) Abstract

The present invention relates to a spatial structure (1, 1a) arranged especially for spending of leisure, said structure comprising structures (2, 3) defining an interior space (6) separated from the ambient open-air. Several at least partially closed separate spaces (7 to 16b, 23) are arranged in said interior space (6), wherein the climate in each separate space can be separately regulated in accordance with mutually differing conditions. The invention also relates to a method for presenting different climate conditions and especially activities related to the cold season, in which the temperature in functionally interconnected essentially closed separate spaces (7 to 16b, 23) is separately regulated to correspond to the appropriate climate.

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SPACE STRUCTURE AND A METHOD FOR PRESENTING THEREIN  
ESPECIALLY THE COLD SEASON

The present invention relates to a spatial structure arranged especially for the spending of leisure, said space having wall and, correspondingly, roof structures defining one or several interior spaces separated from open-air. The present invention further relates to a method for presenting and/or for the realization of different climatic, especially winter activities in spaces separated from open-air and defined by essentially closed structures.

Greenhouses and the like spaces are known, which spaces are separated from open-air and where, within a cut-off of temperature minimums and especially an artificially achieved rise of temperature, it is possible to grow also such plants which at the latitudes in question would not survive on their own, due to alternations in the open-air temperature. Such greenhouses are usually intended for producing plants or parts of plants to be eaten or sensed in some way or in certain circumstances to promote scientific functions. One also knows zoological gardens usually having sheds for selected kinds of animals arranged so that the animals at least during some seasons and especially during the cold seasons obtain shelter against the climate.

Partially refrigerated spaces such as artificial ice tracks for skating, where certain winter sport activities can be practiced regardless of the outdoor temperature are also known. For similar purposes essentially horizontal ski tracks have been developed which are furnished with artificial snow. Deep frozen spaces used for the storage especially of food stuff in such a low temperature that the natural biological degradation is slowed down or completely prevented are also known.

In connection with sporting facilities it has earlier been proposed to combine artificial ice tracks with heated, possibly roofed, winter football fields, so that the waste heat produced by the freezing plant could be utilized for the heating of the football field lawn using an underground heating system.

The aforesaid space arrangements having a controlled temperature are each individually intended for some rather limited activity. Thus, until now there has existed no overall space arrangement based on natural activities or functions in accordance with the different seasons of the year and where the seasons of earth and especially its northern regions could be presented at a latitude and a time of choice and in an environment as natural as possibly.

In order to amend the above described deficiency the present invention discloses a solution as described in the appended claims. Thus, the spatial structure according to the present invention is characterized in that several such at least partially closed separate spaces are arranged within an essentially unitary interior space or in immediate connection thereto, wherein the climate in each of said separate spaces can be separately regulated in accordance with mutually differing conditions. Again, the method according to the present invention is characterized by regulating the temperature of separate essentially closed individual spaces, which spaces are arranged suitably in a common interior space or immediately in connection thereto, individually to correspond to a certain climate, especially a season of the year, so that activities and functions corresponding to the respective climate conditions are brought to accomplishment in a space presenting the mean temperature of the respective climate.

The invention will now be described by way of example with reference to the appended schematic drawings, wherein:

Figure 1 discloses a plan drawing of a solution according to one embodiment of the present invention,

Figure 2 as a sectional view discloses the embodiment of Figure 1 as seen from the side,

Figure 3 as a perspective view discloses the embodiment of Figure 1, and

Figure 4 discloses a possible detail of one separate space.

The embodiment of Figure 1 comprises two for architectural reasons circular structures 1, 1a which define a common interior space. Said structures comprise a wall/roofing structure 2, 3 which suitably is heat insulated or which in some other manner at least to some extent balances the temperature impact of the ambient climate. Said structures are arranged, in the embodiment disclosed, as two main cupolas, as evident especially from Figure 3. Of course, this outer structure 2, 3 can also be accomplished in any other shape, e.g. as a pyramid, as a conventional parallelepiped or as an arbitrary multi-shaped structure. The cupola or corresponding structure is favorably made of glass or the like material which at least to some extent is permeable to sun light so that the light and/or darkness of the ambient outdoor space can be utilized also in the interior space.

In the embodiment disclosed the implementation of a main cupola structure 1a generally corresponds to an ice stadium or a corresponding hall known per se and arranged for sports or the like activities, i.e. it comprises a central suitably refrigerated field 4, e.g. an artificial ice track known per se, including a stand 5 also known per se. This space can be utilized e.g. for sports activities, concerts, dance performances, shows or the like activities. In this cupola structure essentially warm climate conditions prevail, but the structure logically and functionally connects to a second main

cupola 1 in accordance with the basic inventive idea, wherein the general climate as such might be even considerably colder.

According to the invention several separate spaces 7 to 10, 12 to 14 or groups of separate spaces 11, 15, 16 are located in an interior space 6 defined by said main cupola 1. In accordance with the present invention the temperature in each of such separate spaces can be separately regulated in accordance with the desired activity or function.

One or favorably several machineries known per se (not disclosed in the drawings) working in accordance with the heat pump principles or in a corresponding manner are arranged, for the regulation of the temperature, in a service space 22, 22a connected favorably to each of said main cupolas 1, 1a, suitably located under the cupola. These machinery(ies) is(are) used to refrigerate those spaces which are to be colder than the other ones. The excess heat generated in the refrigeration of the cold spaces is favorably utilized for heating spaces 5, 9 which are warmer than other spaces. Favorably, a machinery for works of ice art suitable in an arctic landscape is also arranged in said service space, as well as other machinery and equipment necessary for the function of the arrangement. Said service spaces also suitably comprise spaces, means and equipment for the production and maintenance of snow sculptures or the like.

In the disclosed embodiment spaces for reception, ticket sale 26 as well as certain restaurant space 27 are arranged between said main cupolas 1, 1a, said spaces thus serving both main cupolas. Also the temperature regulating machinery favorably serves both spaces either as such or via separate heat transporting units. In the disclosed embodiment both main cupolas further are surrounded by a ski/slalom and/or sledge slope 23 with artificial snow which also favorably is accomplished by said machineries. Said slope 23 encircles the cupola structures 1, 1a favorably so that it ends below the

level of the service spaces 22 at a level 24 from which a lift 25 takes the users back up to the top of the slope 23. In this manner, for cupolas 1, 1a having a height of e.g. about 40 meters and a corresponding diameter of about 70 meters, a slope 23 is achieved which has a length of about 500 meters. Accomplished in this scale the stand arranged in the cupola 1a will hold 2000 to 5000 persons.

According to the present invention separate spaces or groups of separate spaces are arranged in the suitably cold main cupola 1, the temperature in each individual space being regulated by a suitable refrigeration and/or heating equipment known per se. Thus, a "garden of the four seasons" arranged in the main cupola 1 represents one of the most typical space entities in accordance with the present invention. Said garden comprises suitably four separate spaces defined by at least partially transparent walls, wherein a space 7 may exhibit a typical Nordic or Arctic winter scenery where winter conditions and a corresponding temperature is thus arranged. Especially in order to provide winter conditions a winter scenery arrangement in accordance with US-Patent No. 5,407,392 by the same inventor is favorably arranged in the space. Said arrangement provides, by means of a refrigerating machinery and the introduction of water vapor, ice formations representing winter conditions, which formations may be either separately provided objects of art or e.g. natural trees and structures covered with rime frost. The space further may comprise natural plants and animals capable of enduring the winter and/or imitations thereof. Favorably, sound and light effects showing the season disclosed in a space is arranged in the corresponding space, i.e. the wind whistling and the animals howling in the winter, the murmur of trees, illumination representing the darkness of the polar night and Northern lights effects accomplished favorably by a light cable arrangement etc.

Correspondingly, the space 8 succeeding the winter scenery

favorably corresponds to the Nordic spring. Favorably, this space too comprises the same apparatus i.e. temperature regulating and other apparatus, which apparatus transform the conditions prevailing in the space to correspond to the desired season. In a corresponding manner spaces 9 and 10 may comprise sceneries and conditions presenting summer and autumn, respectively. Of said spaces the one 9 representing e.g. summer can, in practice, be accomplished with such a temperature which actually discloses a tropical summer with genuine tropical plants and animals. On the other hand, by choosing an essentially similar apparatus for each space 7 to 10 and by selecting the natural plants and possibly animals utilized such an arrangement can also be implemented wherein the conditions in said spaces 7 to 10 actually continuously change in a manner which corresponds to the natural change of seasons or, for example, at a faster rhythm than the natural one, where plants accustomed to Northern conditions will thrive in the same manner as in nature. Also in these spaces sound and light effects suitable for the season are implemented, like the songs of birds, sunlight penetrating the leafage of a rain forest, etc.

A garden arrangement showing the seasons of the year, as disclosed above, can be implemented as separate structures comprising one or several transparent walls, and/or especially favorably so that a door leads thereto from the surrounding space and/or from an adjacent space, which door constitutes an entrance into the space so that one suitably can pass from one space to another. According to some favorable embodiments of the present invention the general concept can comprise, in addition to or replacing the season gardens disclosed, also other space arrangements implemented either separately or within one main cupola 1. Thus, e.g. an arctic sauna entity 11 is favorably linked to the structure. Such a sauna entity suitably comprises separate bathing spaces arranged under cupolas or such like arranged within the main space 6, said bathing spaces having warm and cold pools e.g. in a manner

more closely discussed below. Here a cold pool 14 may comprise an ice cover made by a refrigeration machinery, said ice cover having a hole in the ice for winter swimming. The same pool 14 can also serve a winter fishing arrangement so that the pool contains fish to be caught from under the ice cover using e.g. ice angler's jigs, said fish being either especially brought into the pool or bred therein.

Especially favorably said sauna entity 11 comprises a common separate space 11a covering several smaller separate spaces 12, 12a, 12b, 12c, 12e, said common space suitably being arranged within the main space 6 and as such surrounding said separate spaces 12, 12a, 12b etc. arranged for different functions. Thus, an entity is implemented in practice, which comprises several nested structural layers wherein the space 6, 6a between each of every respective two structural layers 1-11a, 11a-12 etc. can be separately climate conditioned in accordance with the principles set forth in the present application.

Correspondingly, the climate in each of the innermost separate spaces 12, 12a, 12b etc. can be changed as desired in a manner which differs from the one in an adjacent or surrounding space. Thus, the sauna entity 11 disclosed in Figure 1 comprises a central steam room 12 which suitably is arranged in an intermediate cupola 11a and around which steam room, besides said earlier disclosed ice cold pool 14a arranged in said separate space 12a, also a warm pool is arranged in a further separate space 12b.

The climate in said separate space 12b can further, either as an entity or to separate, in certain cases separately refrigerated structures, be so cold that the water steaming from the warm pool will form rime frost on the structures of the space 12b and thus constitute a beautiful natural decoration. Besides these cold separate spaces 12a, 12b an entirely warm space 12c for e.g. children may be arranged in said space 11a,

said warm space comprising a warm pool and possibly imitations of frosted structures and plants and/or plants and other decorations adapted for a warm space. A separate snow bath space 12d can further be connected to said sauna space 12, said snow bath space comprising artificial snow where it is possible to tumble or roll around in connection with the sauna bathing.

Said separate spaces 12, 12a, 12b, 12c and 12d arranged favorably in an intermediate space 11a are favorably mutually interconnected by suitably transparent corridors 11b. In the same manner a connection is arranged to dressing rooms 11c arranged suitably in the vicinity of the circumference of the intermediate space 11a, as well as, for example, to a separate space 12e comprising an ice bar. This space 12e can also be arranged partially outside the wall/roof structure defining said intermediate space 11a as disclosed in the Figure.

The general arrangement can further comprise an arctic zoo 13, an arctic fishing and diving pool 14 as disclosed above, as well as suitably other separate spaces for such leisure, hobby or sports activities as can be adapted to a winter landscape. In a corresponding manner e.g. snow churches 15, 15a, 15b for one or suitably different religious groups can be arranged in the common space 6 defined by the common main cupola 1, for weddings or similar occasions. The space also favorably comprises a snow hotel with igloo type accommodation spaces 16, 16a, 16b, in connection to which favorably spaces for washing and similar utilities are arranged for each accommodation space. These washing spaces can favorably be used also as dressing rooms for people visiting the structure, giving opportunity to change into appropriate dress in accordance with the conditions prevailing in each of the separate spaces.

In the disclosed embodiment an artificial iceberg 17 is further arranged centrally in the interior space 6 generally disclosing arctic conditions, said iceberg being arranged

either in its closed separate space or located freely directly in the interior space 6. In this respect Figure 4 discloses an iceberg scenery which, in accordance with one embodiment of the present invention, is confined into its own separate space by transparent walls 18. In this case there can also be animals belonging to the arctic world either as living specimen 19 or as imitations 20, suitably also as plants 21 connected to said scenery. If an iceberg 17 is arranged directly in a common interior space 6 it can, on the other hand, be utilized e.g. for climbing. The erosion of the iceberg 17 caused by the climbing activities can namely be especially easily amended by the refrigerating capacity at hand.

Above some embodiment of the present invention as well as some arrangements implementable in accordance therewith have been disclosed by way of example. For the professional it is, however, clear that the invention can be utilized also in other ways within the scope of the appended claims.

**Claims**

1. A spatial structure (1, 1a) arranged especially for spending of leisure, said structure comprising wall and, correspondingly, roof structures (2, 3) which define one or several interior space(s) (6) separated from the ambient open-air, characterized in that several at least partially closed separate spaces (7 to 16b, 23) are arranged in an essentially unitary interior space (6), or in immediate connection thereto, wherein the climate in each separate space (7 to 16, 2) can be separately regulated in accordance with mutually differing conditions.
2. A structure as defined in claim 1, characterized in that in said at least partially closed separate spaces (7 to 16b, 23) is arranged such activities, which, respectively, constitute different functional groups and suitably are mutually connected by the special climatologic temperature in the respective separate space (7 to 16b, 23), favorably so that they can be at least partially observed also from outside said separate space (7 to 16b, 23) though a transparent wall (18).
3. A structure as defined in claim 1 or 2, characterized in that the temperature of at least one separate space (7) corresponds to the winter temperature of the Nordic or Arctic areas.
4. A structure as defined in any one of claims 1 to 3, characterized in that one or several refrigerating and/or heating apparatus(es) is(are) arranged for the temperature regulation of different spaces, said apparatus being common for several partially closed separate spaces (7 to 16b, 23) or a corresponding space connected to said structure, favorably so that the excess heat which is generated during the refrigeration of a space (7, 11 to 16, 23) adapted for arctic and/or winter activities or functions can be conducted

for the heating of a separate space (5, 9) arranged for tropical and/or summer activities or functions.

5. A structure as defined in any one of claims 1 to 4, characterized in that a separate space (23) for a separate activity or function is arranged in connection with said unitary interior space (6) outside thereof, where the interior temperature of said separate space (23) logically connects to a separate space (7, 12 to 16) arranged in said unitary interior space (6).

6. A structure as defined in any one of claims 1 to 5, characterized in that natural and/or artificial plants (21) and/or animals (19, 20) and/or structures providing experiences of art or such like are located in said at least partially closed separate spaces (7 to 16b, 23).

7. A structure as defined in any one of claims 1 to 6, characterized in that separate spaces for describing at least winter (7) and summer (9), suitably additionally spring (8) and autumn (10) are arranged in said interior space (6), favorably so that the temperatures in said spaces are adapted mutually to change in accordance with the yearly seasonal rhythm of nature or in a rhythm which differs therefrom in a desired manner.

8. A structure as defined in any one of claims 1 to 7, characterized in that at least one separate space (12) comprises a water area (14) or pool having an ice cover and arranged for winter swimming and/or winter jig fishing or similar activity, said pool suitably having fish or the like water animals located therein.

9. A method for presenting different climate conditions and especially activities related to the cold season of the year, characterized in that the temperature in functionally interconnected essentially closed separate spaces

(7 to 16b, 23) is separately regulated to correspond to the appropriate climate so that activities or functions corresponding to a respective climate condition are brought to implementation in a space which suitably has the mean temperature of the respective climate.

10. A method as defined in claim 9, characterized in that excess heat emanating from the refrigeration of a colder separate space (7, 11 to 16, 22) is utilized for the heating of a warmer separate space (5, 9).

11. A method as defined in claim 9 or 10, characterized in that the temperatures in different separate spaces (7 to 10) are brought in turn to mutually alternate in order to disclose and/or imitate the natural seasonal rhythm.

12. A pool structure containing water, characterized in that said pool (14) is arranged in an essentially closed space (12) so that an artificial ice cover can be formed thereon by one or several refrigerating machineries, which ice cover comprises holes for winter swimming and/or winter fishing, or in which ice cover such holes can be made.

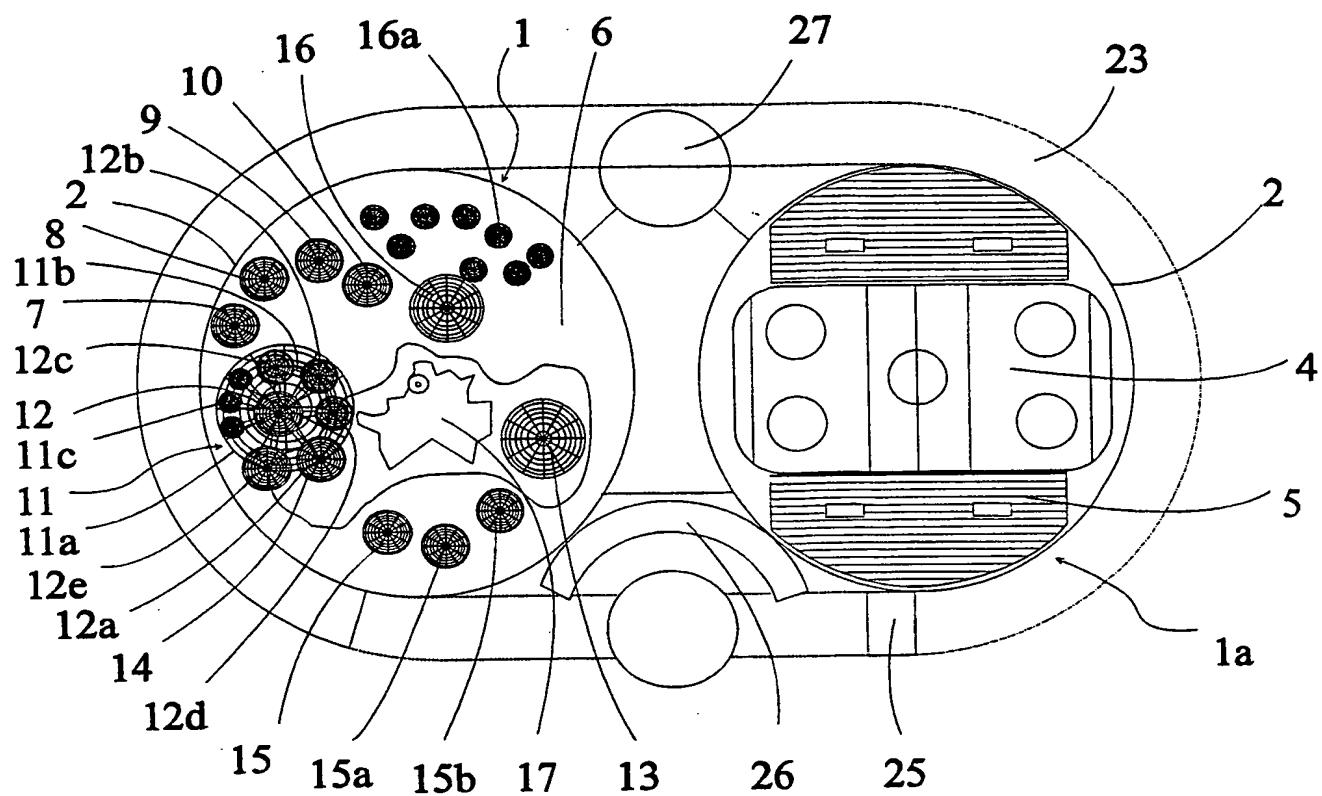


FIG 1

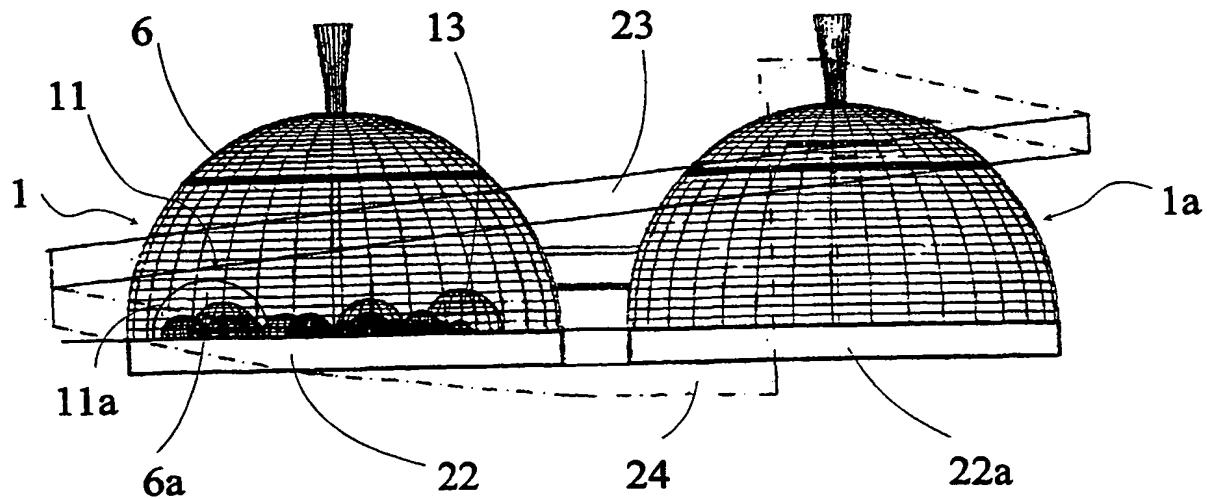


FIG 2

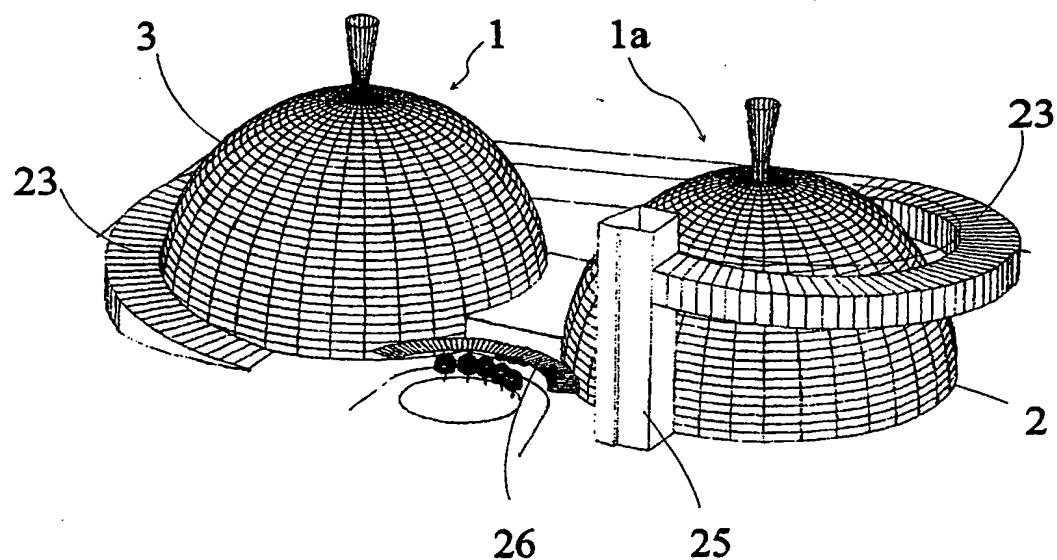


FIG 3

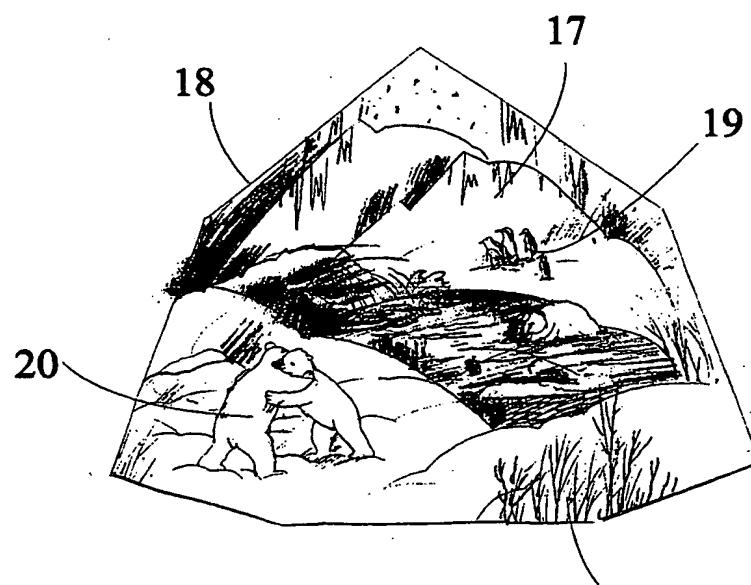


FIG 4

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INTERNATIONAL SEARCH REPORTInternational application No.  
PCT/FI 99/00934

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: E04H 3/10

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: E04H, E04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 19709685 A1 (KEINEMANN, CHRISTOPH), 24 Sept 1998 (24.09.98) --	1-12
A	WO 9709497 A1 (BALLAST NEDAM N.V.), 13 March 1997 (13.03.97) --	1-12
A	US 4686799 A (KAKE), 18 August 1987 (18.08.87) --	1-12
A	US 5407392 A (LAIJOKI-PUSKA), 18 April 1995 (18.04.95) -- -----	1-12

Further documents are listed in the continuation of Box C.

See patent family annex.

- \* Special categories of cited documents
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**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

02/12/99

International application No.  
PCT/FI 99/00934

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